

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-6 (canceled)

7. (currently amended) A sensor comprising:

a substrate;

a nanoelement having first and second ends disposed on the substrate; and

two electrodes disposed on the substrate, each electrode contacting an end of the

~~nanotube nanoelement~~, one electrode including a surface ~~layer~~ coating

including Pd.

8-40. (canceled)

41. (previously presented) The sensor of claim 7, wherein the substrate includes a gate electrode disposed between the two electrodes and beneath the nanoelement.

42. (previously presented) The sensor of claim 7, wherein the nanoelement is a nanowire.

43. (previously presented) The sensor of claim 7, wherein the nanoelement is a nanotube.

44. (previously presented) The sensor of claim 43, further comprising a network of interconnected nanotubes including the nanotube.
45. (previously presented) The sensor of claim 7, wherein the nanoelement is an inorganic nanorod.
46. (currently amended) A bio-molecule sensor comprising:
- a substrate;
  - a nanotube having first and second ends disposed on the substrate; and
  - a pair of electrodes disposed on the substrate, each electrode contacting an end of the nanotube, one electrode comprising a surface ~~layer~~ coating including a molecule with an affinity for the bio-molecule.
47. (currently amended) The bio-molecule sensor of claim 46 wherein the surface ~~layer~~ coating includes biotin.
48. (previously presented) The bio-molecule sensor of claim 46 wherein the bio-molecule is streptavidin.
49. (previously presented) The bio-molecule sensor of claim 46 wherein one electrode of the pair of electrodes comprises a layer of Au over a layer of Pd.

50. (currently amended) A sensor for a specific molecule comprising:
- a substrate;
  - a nanoelement having first and second ends disposed on the substrate;
  - a pair of electrodes disposed on the substrate, each electrode contacting an end of the nanoelement; and
  - a protective layer over the nanoelement, but not over at least one of the electrodes.
51. (previously presented) The sensor of claim 50, wherein the nanoelement is a nanowire.
52. (previously presented) The sensor of claim 50, wherein the nanoelement is an inorganic nanorod.
53. (previously presented) The sensor of claim 50, wherein the nanoelement is a nanotube.
54. (previously presented) The sensor of claim 53, further comprising a network of interconnected nanotubes including the nanotube.
55. (previously presented) The sensor of claim 50, wherein the substrate includes a gate electrode disposed between the two electrodes and beneath the nanoelement.

56. (previously presented) The sensor of claim 50, further comprising a surface layer on one electrode of the pair of electrodes, the surface layer having an affinity for the specific molecule.
57. (previously presented) The sensor of claim 50, wherein the protective layer includes a polymer.
58. (previously presented) A method of sensing a specific molecule comprising:  
providing a sensor including a nanoelement disposed between two electrodes;  
exposing the chemical sensor to an environment including the specific molecule;  
and  
measuring a change in a work function of one of the two electrodes in response to the environment.
59. (previously presented) The method of claim 58 wherein one of the electrodes includes a surface layer having an affinity for the specific molecule.
60. (previously presented) The method of claim 58 wherein providing the sensor further includes providing a gate electrode disposed between the two electrodes and beneath the nanoelement.

61. (previously presented) The method of claim 60 further comprising applying a gate voltage to the gate electrode to alter the Schottky barrier at a junction between the nanoelement and the one of the two electrodes.
62. (previously presented) The method of claim 58 wherein providing the sensor further includes providing a protective layer over the nanoelement.
63. (previously presented) The method of claim 58 wherein measuring the change in the work function includes measuring a Schottky barrier defined between the nanoelement and the one of the two electrodes.
64. (previously presented) The method of claim 63 wherein measuring the Schottky barrier includes measuring a contact resistance.